Warm Season Predictability of Great Plains Hydroclimate

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Progress Report

Figures:

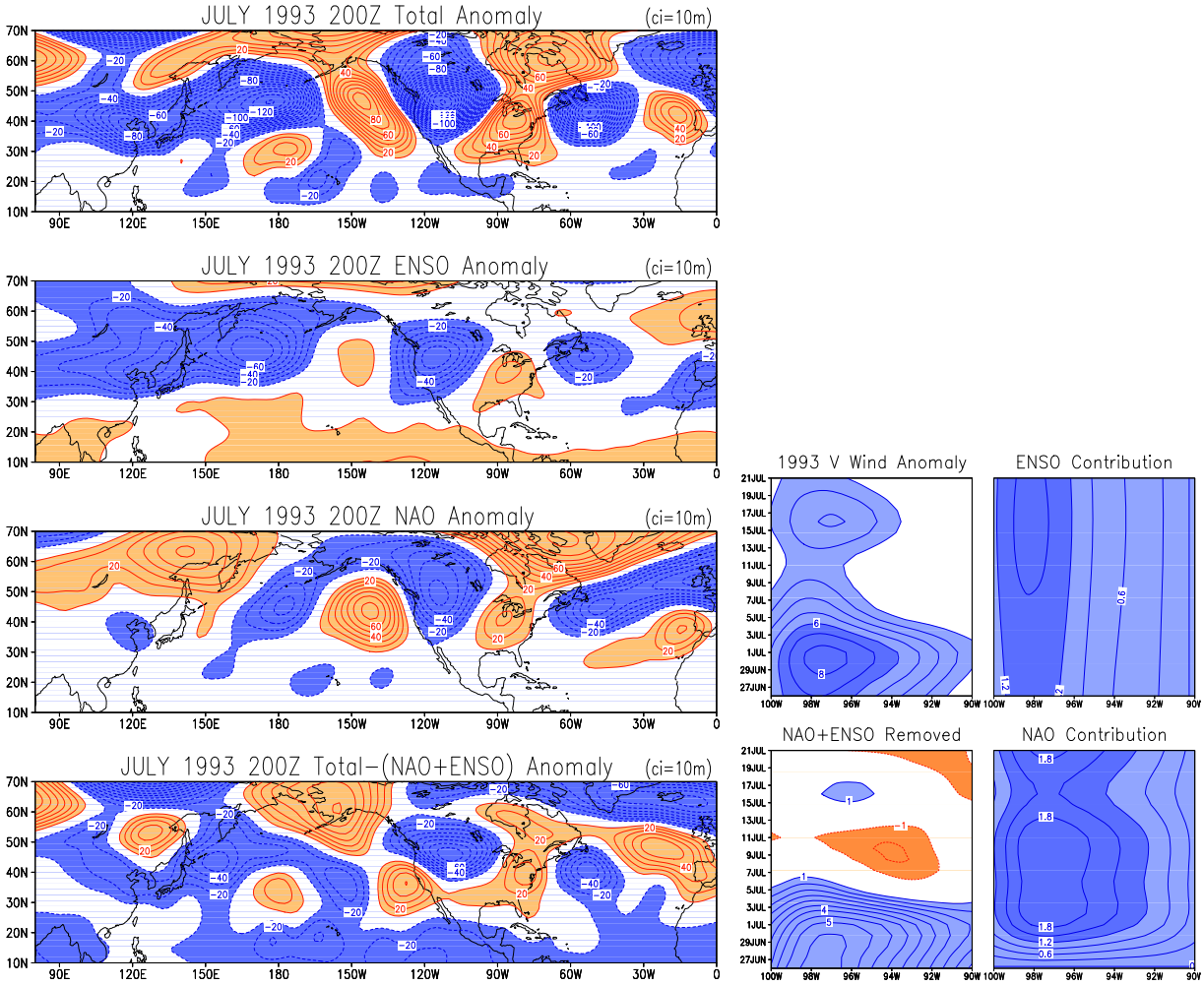

Figure 1. Contribution of NAO and ENSO to the 200 hPa height anomalies (left panels) and 25°-35°N averaged meridional wind anomalies at 900 hPa (time-longitude panels to the right) during July 1993. Negative/positive anomalies are shaded in blue/orange and contoured at 10 m intervals for the height anomalies and 1 m/s for the meridional wind anomalies and 0.3 m/s for the wind anomalies from ENSO and NAO contributions (rightmost panels). From Weaver et al. 2007.

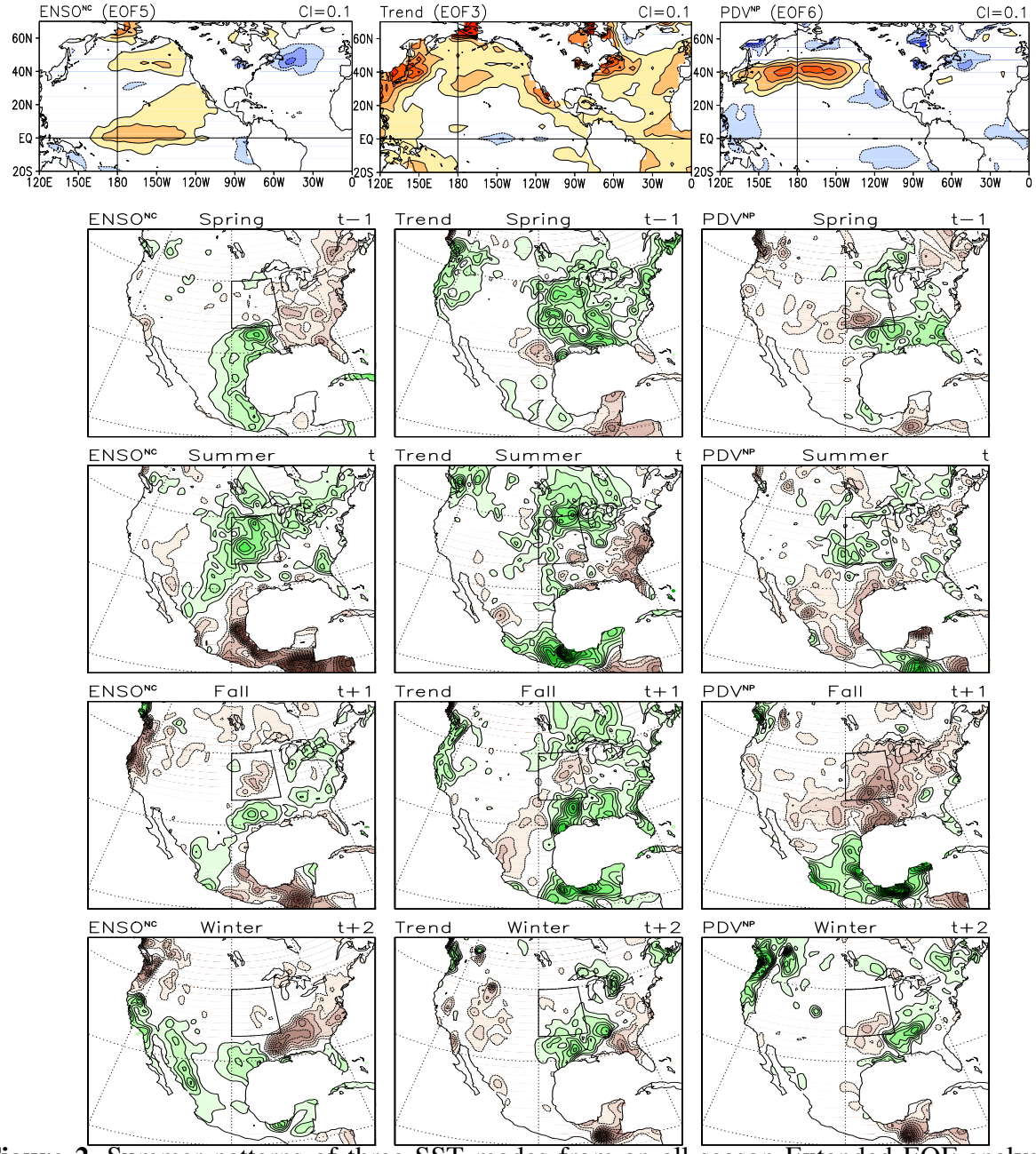

Figure 2. Summer patterns of three SST modes from an all-season Extended EOF analysis of Pacific SSTs (upper row) and corresponding seasonal regressions for non-canonical ENSO, trend and PDV North Pacific (second to fifth rows) modes for the 1900-2002 period. The annual cycle runs downward, with the second to fifth rows corresponding to spring to winter. The maps are obtained from lead/lag regressions of precipitation anomalies on unsmoothed summer SST PCs. Contour interval is 0.1 K for the SST anomalies, and 0.05 mm/day for the regressed precipitation anomalies. From Guan et al. (2008).

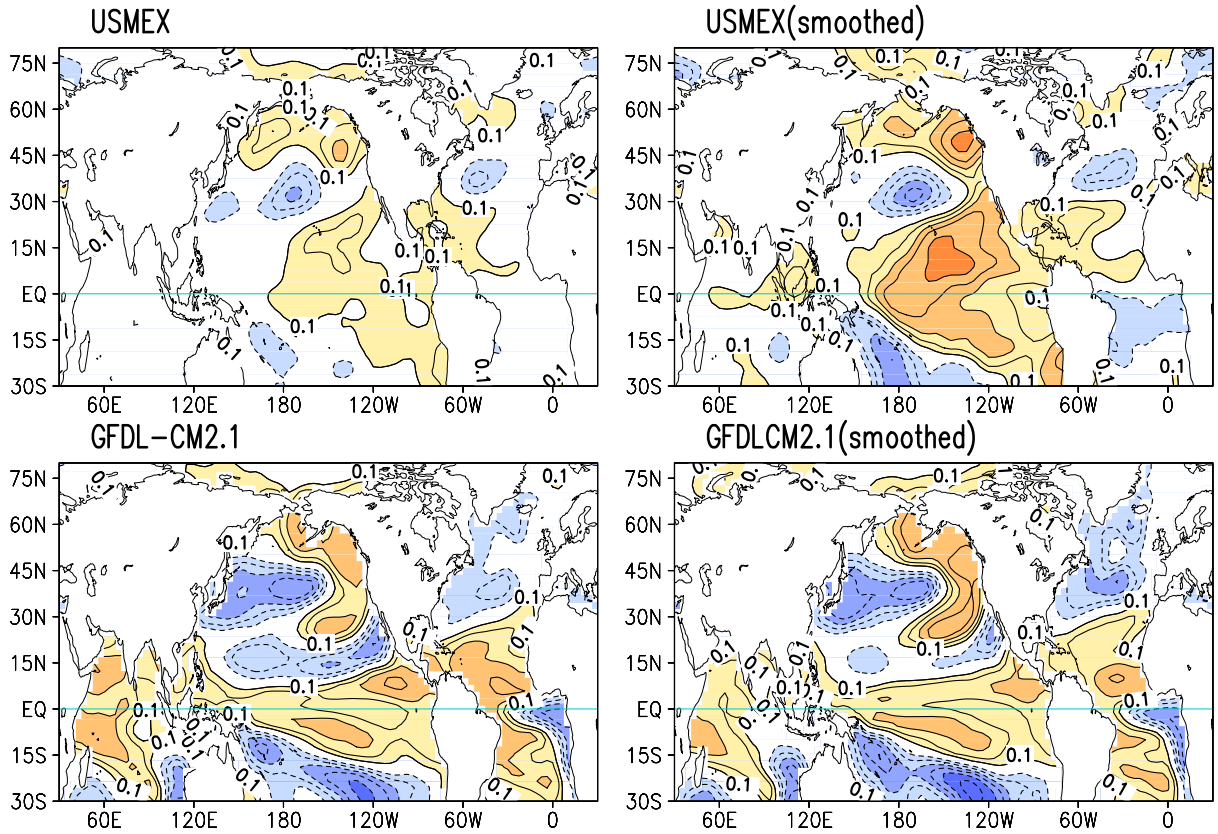

Figure 3. Warm-season SST correlations of the Great Plains precipitation index (area-averaged on the box 100°-90°W, 35°-45°N) from CPC's US-Mexico station precipitation analysis (upper row), and simulation of the 20th century with GFDL coupled model 2.1 (lower row) for the 1951-1998 period. Correlations correspond to an unsmoothed index in the left panels, and a smoothed (via a 1-2-1 binomial filter applied once over summer means) index in the right panels. Contour interval is 0.1.

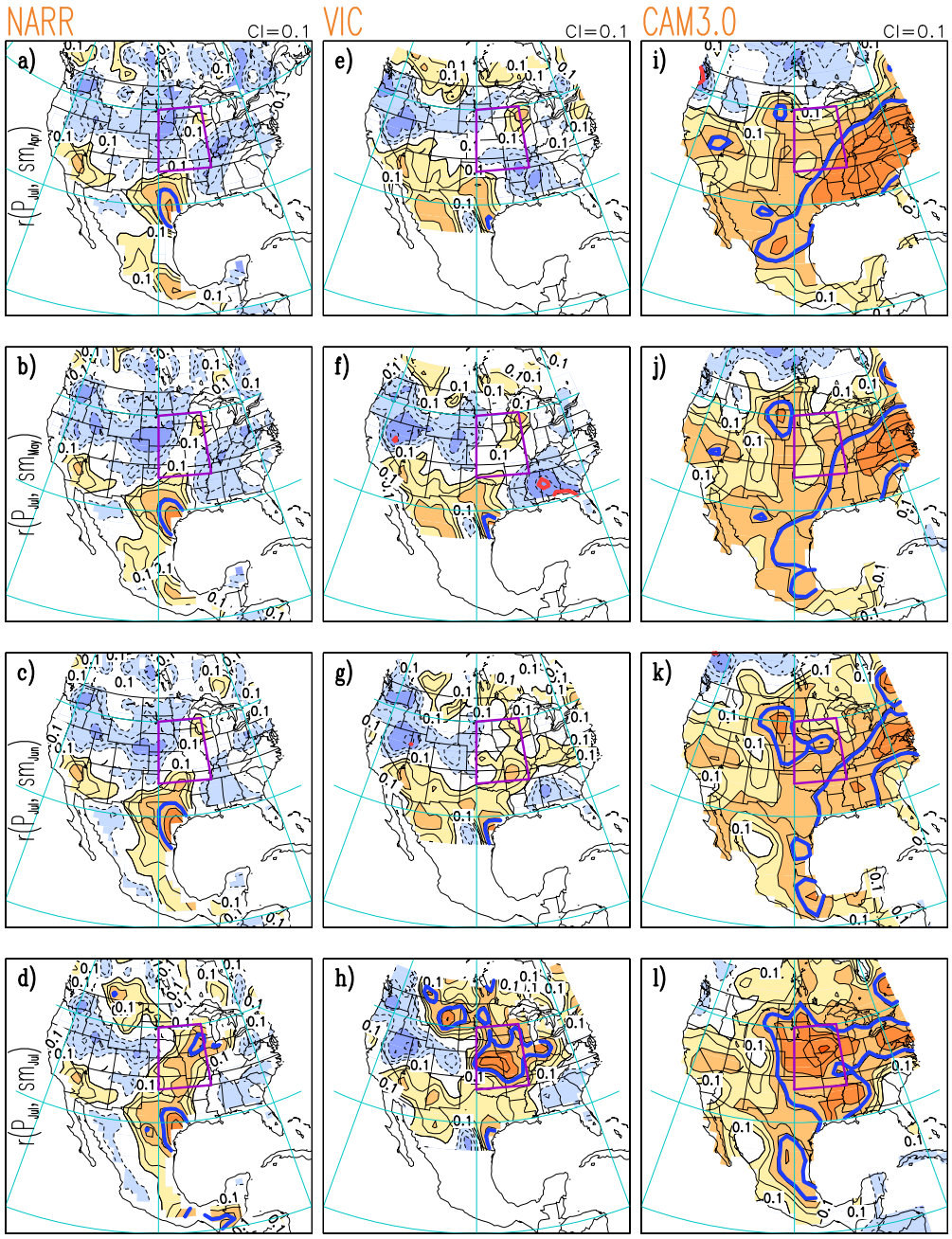

Figure 4. Correlations between July's Great Plains precipitation anomalies with April-July monthly soil moisture anomalies for NARR (left panels), VIC (mid panels), and CAM3.0 (from 5-member ensemble mean; right panels) for the 1979-1999 period. Shading indicates values larger than ±0.1; positive/negative values are red/blue. Contours are 0.1 and the zero line is omitted. Significant positive/negative correlations at the 0.05 level are enclosed by the thick blue/red lines.